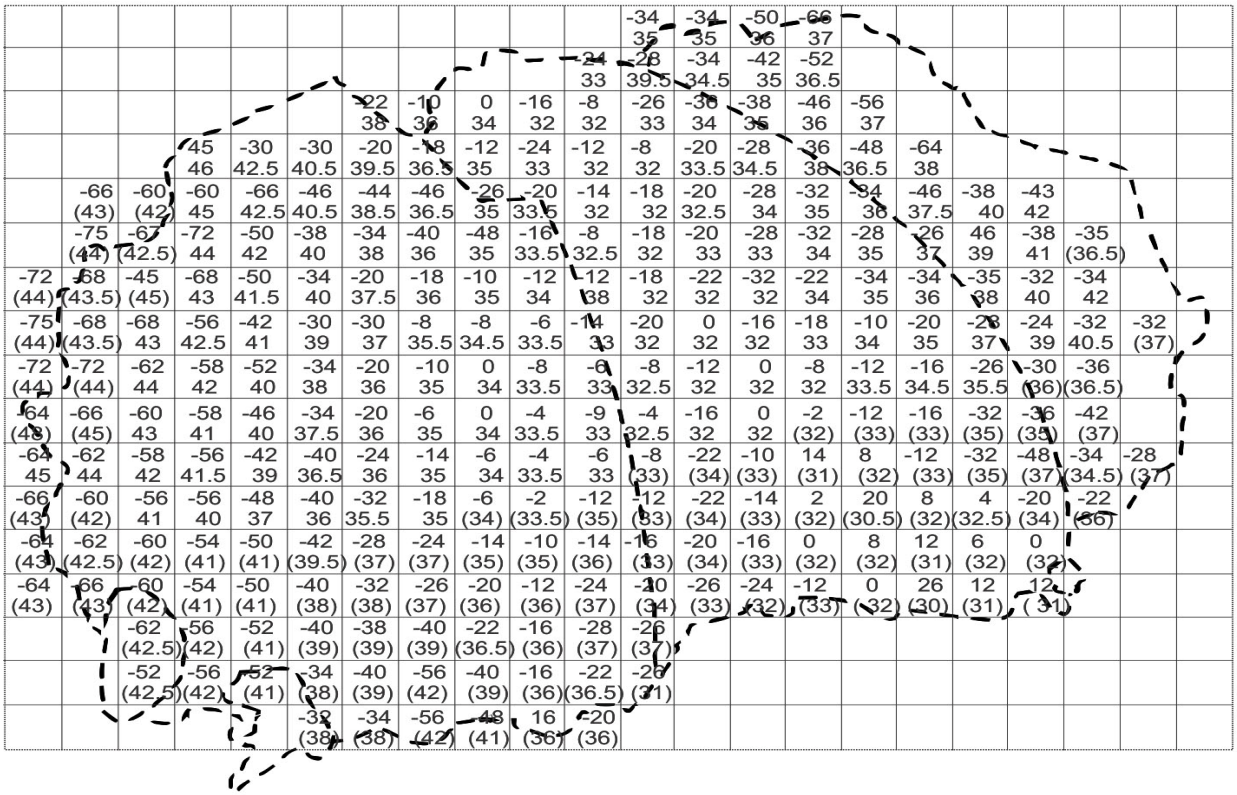

Fig, 6. Linear correlation model $a + b\Delta g$

Table 5

Regression analysis – linear model (Western Macedonia): y = a + bx

Dependent variable – *y*		Independent variable – *x*
Parameter	Estimate	Standard error
Intercept – *a*	–33.12	0.44
Slope – *b*	–0.15	0.01
Analysis of variance		
	Sum of squares	Df	Mean variance
Model	663.61	1	663.61
Error	201.62	62	3.25
Total	865.23	63	
Correlation coefficient = 0.87			
Standard error of est. = 1.80			

Table 6

Regression analysis – linear model (Eastern Macedonia): y = a + bx

Dependent variable – *y*		Independent variable – *x*
Parameter	Estimate	Standard error
Intercept – *a*	–35.78	1.77
Slope – *b*	0.03	0.04
Analysis of variance		
	Sum of squares	Df	Mean variance
Model	3.76	1	3.76
Error	160.28	27	5.93
Total	164.25	28	
Correlation coefficient = 0.15			
Standard error of est. = 2.43			

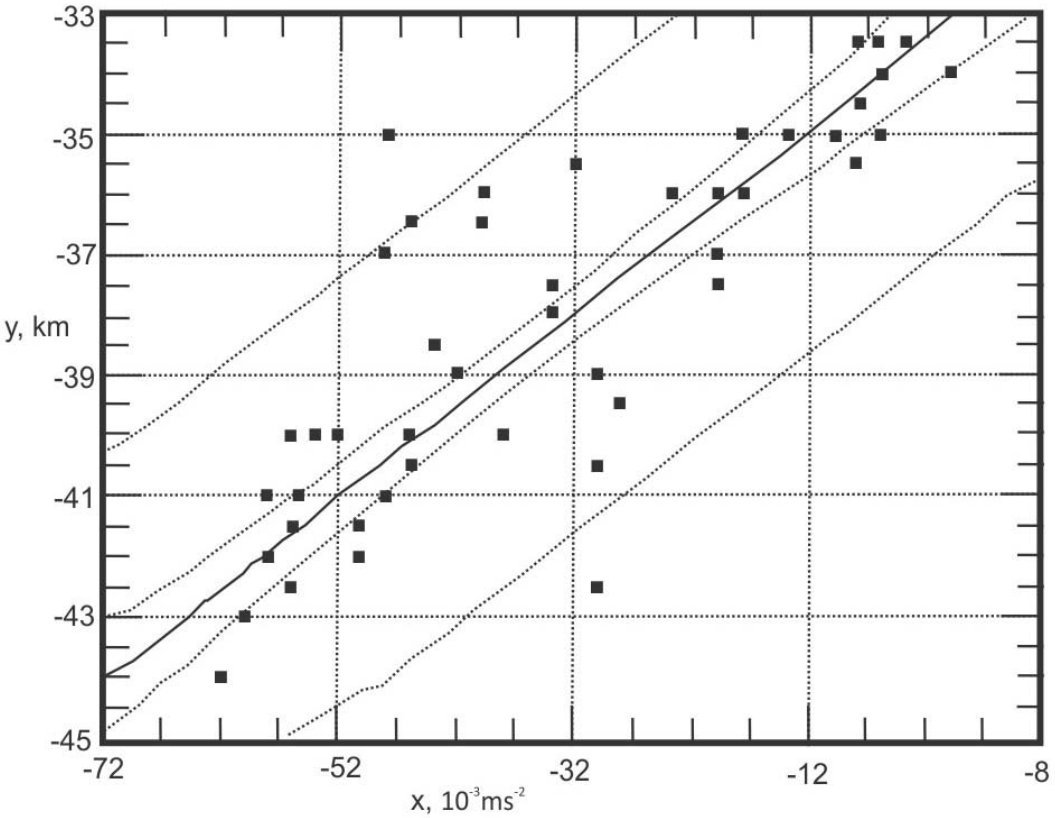

Fig. 7. Analysis of $M = y$ and $\Delta g = x$ for Western Macedonia

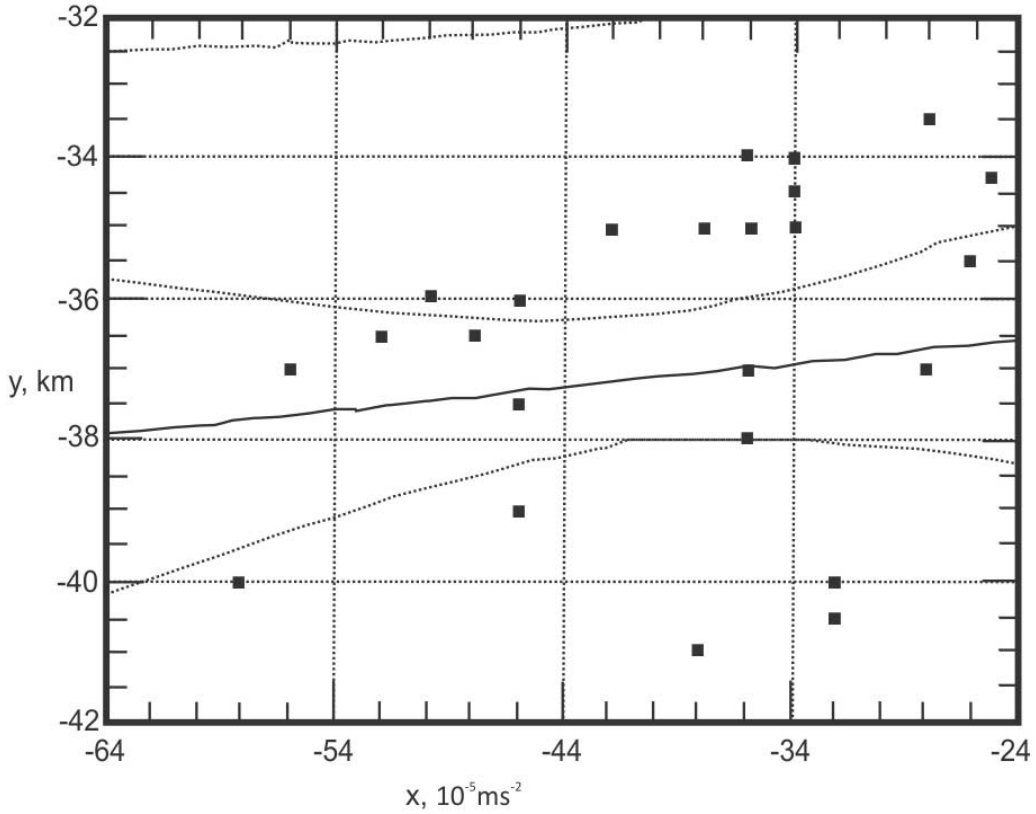

Fig. 8. Analysis of $M = y$ and $\Delta g = x$ for Vardar zone

Table 7

Regression analysis – linear model (Vardar Zone): y = a + bx

Dependent variable – *y*		Independent variable – *x*	
Parameter	Estimate	Standard error	
Intercept – *a*	–32.18	0.36	
Slope – *b*	0.07	0.01	
Analysis of variance			
	Sum of squares	Df	Mean variance
Model	37.13	1	37.13
Error	118.46	60	1.97
Total	155.59	61	
Correlation coefficient = 0.48			
Standard error of est. = 1.40			

Table 8

Regression analysis – linear model (Macedonia): y = a + bx

Dependent variable – *y*		Independent variable – *x*	
Parameter	Estimate	Standard error	
Intercept – *a*	–31.73	0.33	
Slope – *b*	0.15	0.01	
Analysis of variance			
	Sum of squares	Df	Mean variance
Model	1248.69	1	1248.69
Error	757.09	153	4.94
Total	2005.79	154	
Correlation coefficient = 0.78			
Standard error of est. = 2.22			

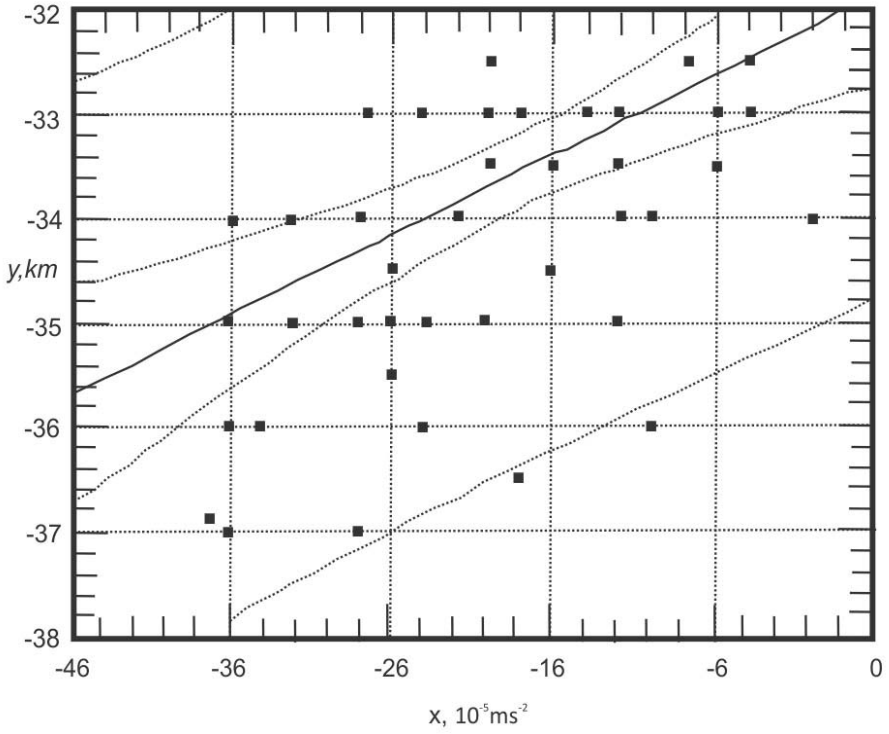

Fig. 9. Analysis of $M = y$ and $\Delta g = x$ for Eastern Macedonia

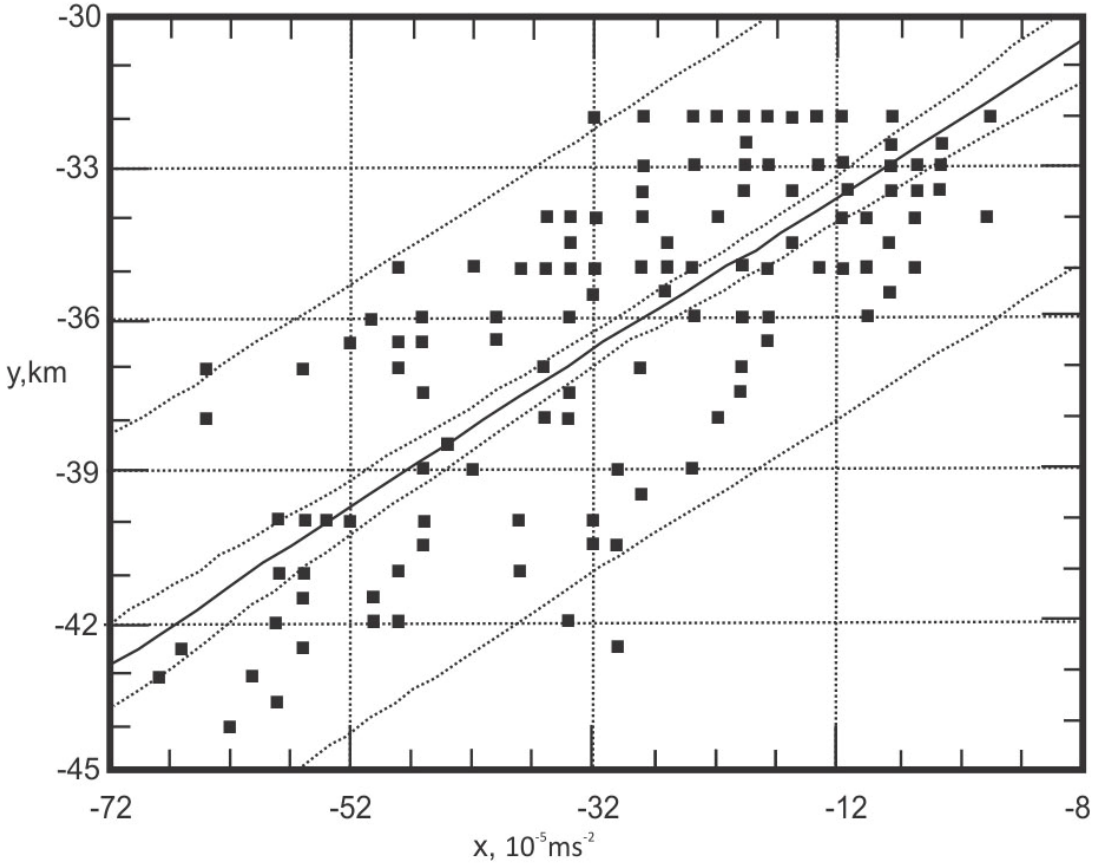

Fig. 10. Analysis of $M = y$ and $\Delta g = x$ for Macedonia

CONCLUSION

Based on exploration carried out as well as geophysical aspect of the geotectonic processes of the explored area it can be inferred that:

The greater values of correlation coefficient compared to other explored coefficients indicate that density distribution in undercrust structures on boundary *M* is larger relative to the relief changes.

The high values of correlation coefficient for $M = f(\Delta g)$ and the small fluctuation interval of the values compared to the other two correlation coefficients which have lower value but wider fluctuation interval indicates that undercrust structures are relatively simpler and their changes are pronounced by smaller gradients compared to crust structures.

The structure of the territory of Western Macedonia is simpler compared to the other two zones.

The correlation coefficients for $M = f(R)$ for Eastern Macedonia show inverse dependence which indicates that the processes which affected the crust structures had no influence on boundary *M*.

– The small value of correlation coefficients of $M = f(\Delta g)$ indicates the complex structure of this zone.

– The crust and undercrust structures of the Vardar zone are of complex nature, but the Vardar zone as a whole has an impact on boundary *M*.

– The Western Macedonian zone shows the lowest seismicity compared to the other two zones.

– The Vardar zone has the most pronounced seismicity in the territory of Macedonia.

– More pronounced seismic activity should be expected in the Eastern Macedonian zone.

Exploration of correlation dependencies of crust and undercrust structures by linear regression method is consistent with the analysis of the seismicity established on the territory of Macedonia to the present time.

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Р е з и м е

ГЕОФИЗИЧКИ АСПЕКТИ НА ГЕОТЕКТОНСКИТЕ ПРОЦЕСИ ВО ВАРДАРСКАТА И ИСТОЧНО-МАКЕДОНСКАТА ЗОНА

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Клучни зборови: корелација; моходисконтинуитет; Бугеова аномалија; геотектонски модел; дигитализација; регресија

Трудот ја објаснува корелационата зависност на параметрите на Земјината кора поврзани со длабочината на Мохо дисконтинуитетот. Овие моделски истражувања користат податоци за територијата на Република Македонија. Во моделите територијата е поделена на три зони врз основа на неотектонската геолошка градба [1]. Извршените анализи за корелацијата на коефициентите за одделните зони овозможија одделување на зоните, релативно, една во однос на друга.